

June 7, 2000

Ms. Rose E. Gottemoeller
Acting Deputy Administrator for
Defense Nuclear Nonproliferation
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Ms. Gottemoeller:

The Defense Nuclear Facilities Safety Board (Board) and its staff have been reviewing the safety aspects of the design of the Pit Disassembly and Conversion Facility (PDCF), the first of three plutonium disposition facilities planned to be constructed at the Savannah River Site. At this early stage of the design, the goal of our review is to identify basic design issues that could have major safety impacts on the proposed facility. One such issue identified for PDCF is the design of the filtration system to be used for final building confinement. Plutonium processing facilities historically use either sand filters or banks of high-efficiency particulate air (HEPA) filters as the final barrier to airborne release of hazardous and radioactive materials to the environment. The ongoing Title I design for PDCF assumes that HEPA filters will be used.

The Board's review has led to the conclusion that a sand filter would offer important advantages compared to a HEPA filtration system for this application. Although the filtering efficiency of sand filters is slightly lower than that of HEPA systems, sand filters provide better inherent resistance to severe accidents such as fires, earthquakes, and explosions; are relatively impervious to chemical attack; do not need periodic replacement; and generally provide improved passive protection for workers, the public, and the environment. Furthermore, sand filters have performed very well during decades of use at the Savannah River Site and can reduce life cycle costs of the project. The Board believes the additional up-front cost of a sand filter to be reasonable relative to the benefits gained. This cost would be offset at least partially by the reduced surveillance and maintenance costs of a sand filter as compared with a HEPA filtration system and by elimination of the potential need for safety-grade fire protection systems for a HEPA filtration system.

Discussions between the Board's staff and representatives from the Department of Energy (DOE) have indicated that DOE does not intend to consider a sand filter for PDCF unless the hazard and safety analysis demonstrates that a safety-class system is needed to protect the filtration system from fire. If such a need is demonstrated, DOE will then evaluate whether a safety-class fire protection system should be added, or whether a sand filter should be used instead of HEPA filters. The Board believes that deferring this evaluation will magnify the cost and disruption associated with potential design changes and could result in undesirable design compromises. The Board notes that, late in the design effort for the Actinide Packaging and Storage Facility previously planned for the Savannah River Site, Westinghouse Savannah River

Company found that a full facility fire would severely challenge the proposed HEPA filtration system, and that the problem could be addressed effectively by changing to a sand filter.

Because of the inherent safety of sand filters, as well as experience with these filters at the Savannah River Site, the Board believes it would be prudent for DOE to reevaluate its position regarding use of a sand filter for PDCF now, instead of waiting until later in the design phase. Likewise, it would be appropriate for DOE to ensure that a consistent approach is taken toward providing final building confinement that is effective and reliable for the other fissile material disposition facilities planned for the Savannah River Site.

The Board wishes to be kept informed of the results of DOE's evaluations and to be briefed by DOE as it nears a final decision for the Title I design.

Sincerely,

John T. Conway
Chairman

c: Ms. Laura S. Holgate
Mr. Greg Rudy
Mr. Mark B. Whitaker, Jr.